WHAT IS CLAIMED IS:

1. A chimeric pIX protein having at least one adenoviral pIX domain and a non-native amino acid sequence.

2. The chimeric pIX protein of claim 1, wherein the non-native amino acid sequence is a ligand or an antigen.

3. The chimeric pIX protein of claim 2, wherein the non-native amino acid sequence is a ligand that binds to a substrate present on the surface of a cell.

4. The chimeric pIX protein of claim 3, wherein the ligand recognizes a CD40 antigen

5. The chimeric pIX protein of claim 3, wherein the ligand is an RGD-containing or polylysine-containing sequence.

6. The chimeric pIX protein of claim 1, wherein the non-native amino acid is constrained by a peptide loop within the chimeric protein.

7. The chimeric pIX protein of claim 6, wherein the loop comprises a disulfide bond between non-adjacent amino acids of the protein.

8. The chimeric pIX protein of claim 1, wherein the non-native amino acid sequence constitutes the C-terminus of the chimeric protein.

9. The chimeric pIX protein of claim 1, wherein the non-native amino acid sequence constitutes the N-terminus of the chimeric protein.

10. The chimeric pIX protein of claim 1, wherein the non-native amino acid sequence is located internally within the chimeric protein.

11. The chimeric pIX protein of claim 1, wherein at least one adenoviral pIX domain consists essentially of an adenoviral pIX peptide sequence truncated at the C-terminus.

12. The chimeric pIX protein of claim 1, wherein at least one adenoviral pIX domain consists essentially of an adenoviral pIX peptide sequence truncated at the N-terminus.

13. The chimeric pIX protein of claim 1, comprising a first adenoviral pIX domain consisting essentially of an adenoviral pIX peptide sequence truncated at the C-terminus and a second adenoviral pIX domain consisting essentially of an adenoviral pIX peptide sequence truncated at the N-terminus.

14. The chimeric pIX protein of claim 13, wherein the first and the second adenoviral pIX domains do not share any common peptide sequences.

15. The chimeric pIX protein of claim 13, wherein a spacer peptide domain separates the first and the second adenoviral pIX domains.

16. The chimeric pIX protein of claim 15, wherein the spacer peptide domain comprises the ligand domain.

17. The chimeric pIX protein of claim 1, having only one adenoviral pIX domain consisting essentially of a full-length adenoviral pIX peptide sequence.

18. A nucleic acid encoding the chimeric pIX protein of claim 1.

19. An adenoviral capsid containing the pIX protein of claim 1.

20. The adenoviral capsid of claim 19, which binds dendritic cells.

21. The adenoviral capsid of claim 19, comprising a mutant adenoviral fiber protein having an affinity for a native adenoviral cellular receptor of at least about an order of magnitude less than a wild-type adenoviral fiber protein.

22. The adenoviral capsid of claim 19, comprising an adenoviral penton base protein having a mutation affecting at least one native RGD sequence.

23. The adenoviral capsid of claim 19, comprising an adenoviral hexon protein having a mutation affecting at least one native HVR sequence.

24. The adenoviral capsid of claim 19, lacking a native glycosylation or phosphorylation site.

25. The adenoviral capsid of claim 19, which is conjugated to polyethylene glycol.

26. The adenoviral capsid of claim 19, which elicits less immunogenicity in a host animal than does a wild-type adenovirus.

27. The adenoviral capsid of claim 19, comprising a second non-adenoviral ligand conjugated to a fiber, a penton, a hexon, a protein IIIa or a protein VI.

28. The adenoviral capsid of claim 27, wherein the non-native amino acid is a ligand and wherein the second non-adenoviral ligand recognizes the same substrate as the non-native amino acid.

29. A composition of matter comprising the adenoviral capsid of claim 19 and a nucleic acid.

30. The composition of matter of claim 29, further comprising a liposome.

31. An adenoviral vector comprising the adenoviral capsid of claim 19 and an adenoviral genome.

32. The adenoviral vector of claim 31, which is replication incompetent.

33. The adenoviral vector of claim 31, which does not productively infect HEK-293 cells.

34. The adenoviral vector of claim 31, wherein the adenoviral genome comprises a non-native nucleic acid for transcription.

35. The adenoviral vector of claim 34, wherein the non-native nucleic acid for transcription is operably linked to a non-adenoviral promoter.

36. The adenoviral vector of claim 35, having a ligand that binds to a substrate present on the surface of a cell and wherein the non-adenoviral promoter is active within the cell.

37. The adenoviral vector of claim 35, wherein the non-adenoviral promoter is a tissue-specific promoter.

38. The adenoviral vector of claim 35, wherein the non-adenoviral promoter is a regulable promoter.

39. A method of infecting a cell, comprising contacting a cell with an adenoviral vector of claim 31.

40. The method of claim 39, wherein the adenoviral genome comprises a non-native nucleic acid encoding a protein, and wherein the nucleic acid is expressed within the cell to produce the protein.